

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
16 June 2005 (16.06.2005)

PCT

(10) International Publication Number  
WO 2005/054443 A1

(51) International Patent Classification<sup>7</sup>: C12N 1/04, 1/20

(74) Agent: YACOOB, Reza; 1755 Steeles Avenue West, Toronto, Ontario M2R 3T4 (CA).

(21) International Application Number:

PCT/CA2004/002025

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:

30 November 2004 (30.11.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/481,734 3 December 2003 (03.12.2003) US

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,

(71) Applicant (for all designated States except US): AVEN-TIS PASTEUR LIMITED [CA/CA]; 1755 Steeles Avenue West, Toronto, Ontario M2R 3T4 (CA).

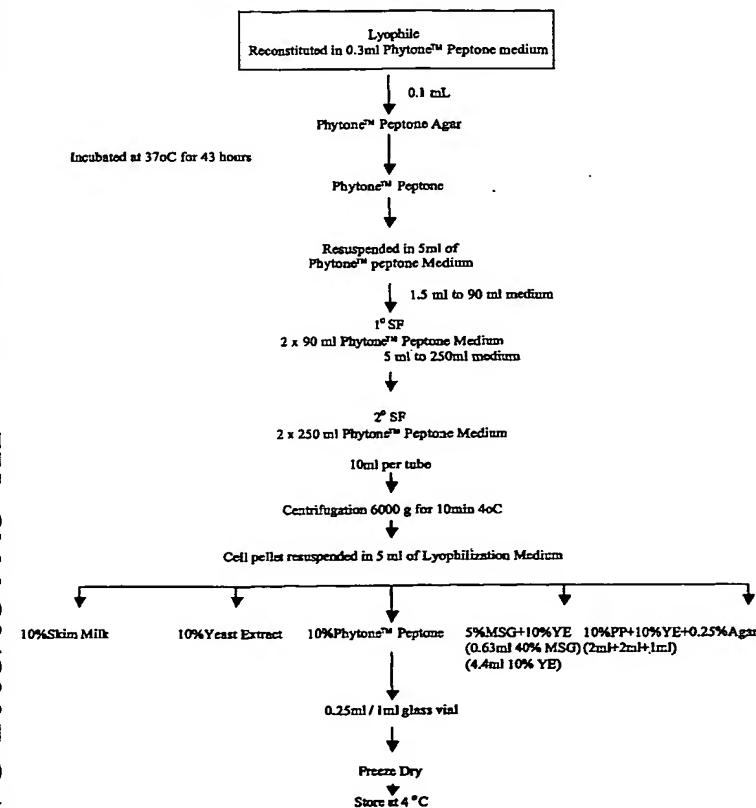
(72) Inventor; and

(75) Inventor/Applicant (for US only): LEE, Tim [CA/CA]; 7 Seneca Hill Drive, Toronto, Ontario M2J 2W1 (CA).

[Continued on next page]

(54) Title: CRYO-PROTECTIVE AGENTS FOR MICROORGANISMS

A flow diagram outlining the preparation and lyophilization of a *C. diphtheriae* culture.



(57) Abstract: A lyophilization medium for a microorganism is provided wherein the medium is substantially free of animal-derived products and comprises yeast extract and monosodium glutamate. The lyophilisation medium can be used for cryoprotection of strains of bacteria such as *Corynebacterium diphtheriae*. Method for preparing a freeze-dried culture of a microorganism using the lyophilization medium, and lyophiles of microorganisms are also provided.

WO 2005/054443 A1



SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *with international search report*